

What is claimed is:

**CLAIMS**

1. In a wireless cellular communication system having a base transceiver station located within a home cell and a plurality of substantially adjacent cells each having a repeater located therein, a method for managing a plurality of mobile transceiver units, comprising the steps of:

receiving at one of said repeaters, a signal from a mobile transceiver unit on an uplink communication channel;

measuring at said repeater a power level of said signal as received by said repeater; and

transmitting a backhaul signal from said repeater to said base transceiver station on a backhaul communication link, wherein said backhaul signal is transmitted at one of a plurality of discrete power levels providing an indication of said power level as measured by said repeater.

2. The method according to claim 1 wherein said backhaul signal is comprised of at least a traffic portion of said signal received from said mobile transceiver unit.

3. The method according to claim 1, further comprising the steps of selectively controlling a backhaul signal transmitted power level to indicate said power level of said signal received from said mobile transceiver unit.

4. The method according to claim 3, wherein said selectively controlling a backhaul signal transmitted power level further comprises the step of:  
generating power level data which is a digital representation of said power level as measured at said repeater;  
correlating said power level data to a predetermined transmitter power level associated with said power level; and  
controlling a transmitter of said repeater to transmit at said predetermined transmitter power level.

5. The method according to claim 4, wherein said base transceiver station (BTS) assigns channels in said wireless communication system based on said indication of said power level.

6. The method according to claim 4, wherein a base station controller (BSC) coupled to the base transceiver station assigns channels in said wireless communication system based on said indication of said power level.

7. The method according to claim 1, wherein the step of transmitting further comprises the step of using four discrete power levels to provide an indication if the power level as measured by the repeater is too high, in range, below range, or requiring handoff.

8. The method of claim 7, wherein the method further comprises the step of receiving the backhaul signal at one of four discrete power levels at said base transceiver station and correspondingly transmitting instructions to the mobile transceiver unit to decrease power, maintain power, boost power, or prepare for hand off to another base transceiver station or repeater.

9. The method according to claim 1 wherein the method further comprises the step of delaying the step of transmitting the backhaul signal by a predetermined amount of time.

10. A repeater in a wireless cellular communication system having a base transceiver station located within a home cell and a plurality of substantially adjacent cells each having said repeater located therein, said repeater, comprising:  
a receiver for receiving at one of said repeaters, a signal from a mobile transceiver unit via an uplink communication channel;

6 power measurement means for measuring at said repeater a power  
 7 level of said signal as received by said repeater; and  
 8 a transmitter for transmitting a backhaul signal from said repeater to  
 9 said base transceiver station via a backhaul communication link, wherein said  
 10 backhaul signal is transmitted at one of a plurality of discrete power levels  
 11 providing an indication of said power level from the mobile transceiver as measured  
 12 by said repeater.

1 11. The repeater according to claim 10, wherein said backhaul signal  
 2 comprises at least a traffic portion of said signal received from said mobile  
 3 transceiver unit.

1 12. The repeater according to claim 11, wherein the plurality of discrete  
 2 power levels providing an indication of said power level as measured by said  
 3 repeater are four discrete power levels to provide an indication if the power level as  
 4 measured by the repeater is too high, in range, below range, or requiring handoff to  
 5 another repeater or base transceiver station.

1 13. In a wireless cellular communication system having a base transceiver  
 2 station located within a home cell, a plurality of substantially adjacent cells each  
 3 having a repeater located therein, a method for automatically controlling power

4 level in a backhaul communication link, said link having at least one channel, the  
 5 method comprising:  
 6 receiving at one of said repeaters, a signal from an uplink channel;  
 7 measuring at said repeater, a signal power level of said signal as  
 8 received by said repeater;  
 9 transmitting a backhaul signal from said repeater to said base  
 10 transceiver station, wherein said backhaul signal comprises at least a traffic portion  
 11 of said signal received from the uplink channel which is transmitted at one of a  
 12 plurality of discrete power levels providing an indication of said signal power level  
 13 as measured by said repeater;  
 14 receiving at a base transceiver station, said indication of said signal  
 15 power level and said at least a traffic portion of said signal; and  
 16 assigning channels in said wireless communication system at said  
 17 base station, based on said signal power level.

1 14. The method of claim 13, wherein said signal from an uplink channel  
 2 received at one of said repeaters is from a mobile transceiver signal.

1 15. The method of claim 13, wherein said signal from an uplink channel  
 2 received at one of said repeaters is from a pilot signal.

1 16. The method according to claim 13, wherein the method further  
2 comprises the step of delaying the step of transmitting the backhaul signal by at  
3 least one frame.

1 17. A configurable base transceiver station in a communication system  
2 having the base transceiver station located within a home cell and a plurality of  
3 substantially adjacent cells each having a repeater located therein, comprising:  
4 a transmitter for transmitting traffic and control signals to the  
5 repeater;  
6 a receiver for receiving a backhaul signal from the repeater, wherein  
7 the backhaul signal is transmitted at one of a plurality of discrete power levels  
8 indicative of a power level measured from an uplink communication channel at the  
9 repeater; and  
10 a processor that is programmed to selectively configure the plurality of  
11 discrete power levels at which the repeater will transmit the backhaul signal.

1 18. The configurable base transceiver station of claim 15, wherein the  
2 uplink communication channel is a channel containing signals from a mobile  
3 transceiver unit.

1 19. The configurable base transceiver station of claim 16, wherein the  
 2 processor is further programmed to use the control signal to control the power level  
 3 of the mobile transceiver unit based on the plurality of discrete power levels  
 4 measured on the backhaul signal at the receiver of the base transceiver station.

1 20. The configurable base transceiver station of claim 17, wherein the  
 2 processor is further programmed to decrease the power level of the uplink channel  
 3 if the backhaul signal is transmitting at a first power level, maintain the power level  
 4 of the uplink channel if the backhaul signal is transmitting at a second power level,  
 5 increase the power level if the backhaul signal is transmitting at a third power level,  
 6 and request that the uplink channel handoff to another repeater or base transceiver  
 7 station if the backhaul signal is transmitting at a fourth power level.

09/22/00 07:25:40